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Can We Trust Our Finds Distribution Maps?

Anchoring Field Survey Data by Field Experiments in the Raganello Basin (Calabria, Italy)

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Aims and Background

Archaeological field surveys, especially of the ‚non-site' or ‚off-site' kind, aim to produce a detailed, fair and complete record of the archaeological remains detectable on the land surface. However, all practising survey archaeologists agree that many factors conspire to reduce the representativity of the samples collected.

The experimental study of these factors began in the early 1980s, with Stephen Shennan's attempts in East Hampshire to assess the reliability of his surface collections (Shennan 1985). Two other noteworthy studies, both conducted in the late 1990s, are Robert Schön's PhD research in Greece (Schön 2002) and Edward Banning's experimental work on detection curves (Banning 2002).

Unfortunately the lessons of these studies can not easily be applied to other existing regional field survey databases, such as the ones produced over the past 15 years by the Groningen Institute of Archaeology in central and southern Italy. The main reason for this is the fact that survey protocols (for both sampling and documentation) are not yet sufficiently standardized to allow a direct comparison across projects.

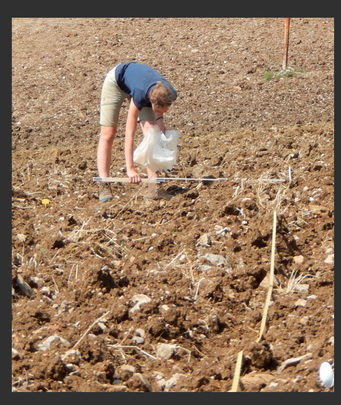
In order to determine the reliability of our own survey datasets, we felt the need to experimentally test some of the basic assumptions and parameters underlying modern intensive and systematic field walking surveys. We believe that experiments such as these will also contribute towards solving the problem of interregional and international comparability of field walking datasets.

The Experiments of July 2014

In the summer of 2014 the authors have conducted field survey experiments in the Raganello Basin, the Calabrian study area of the Groningen Institute of Archaeology (GIA). Field experiments were conducted to study the variability of standard surface samples in relation to walker abilities and experience (experiment 1), and to determine detection curves for different find categories (experiment 2).

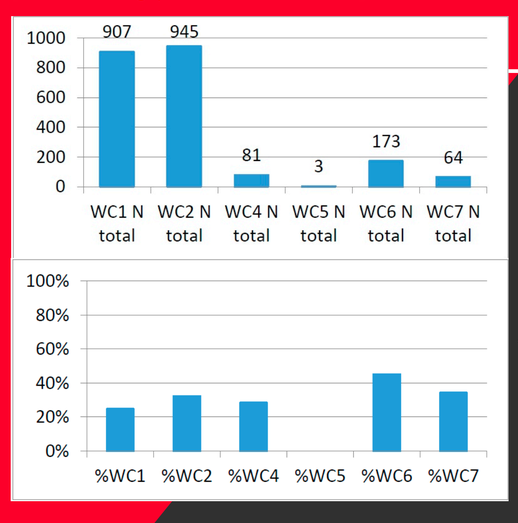
The aim of experiment 1 is to study the variability of recovery rates for individual (experienced and inexperienced) surveyors. The participants were instructed to survey according to the standard GIA sampling strategy (collecting all non-recent artefacts along a 50m transect at strolling speed). In total, over 280 transects were walked for experiment 1. All finds were processed using a simplified classification that allows us to compare recovery rates of different ware classes, sizes, and colors between the seven participants.

The aim of experiment 2 is to study the detection curve for individual walker transects. Many survey projects assume a notional swath width of at least 2m for individual walker transects (e.g. Banning 2002), but we suspected that this estimate was too high. A measuring tape was used to mark the central line of a 50m length transect, and pegs were used to set out parallel lines at 2m distance. Walkers first surveyed the transect according to the standard method and marked all artefacts with plastic spoons; then, the distance from each artefact to the central line was measured in 25cm bins and the finds bagged accordingly.

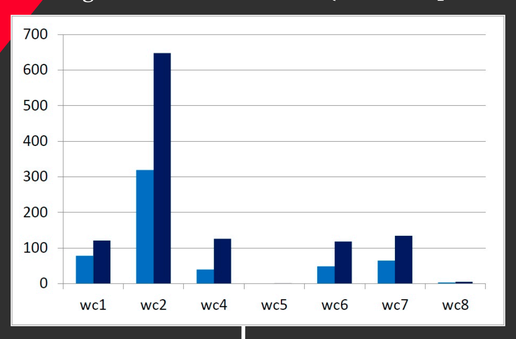


Preliminary Results

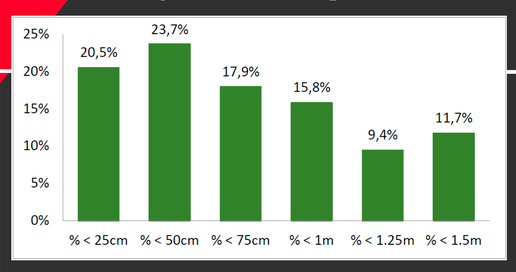
Q: What proportion of the surface artefact assemblage is picked up during standard surveys?
A: Between 25 and 32% of Ware classes 1, 2 and 4 are picked up, despite Wc 4 being much rarer than 1 and 2.
[data for Wc5-7 are irrelevant here]



Q: Does walking more slowly change the composition of the sample?
A: It appears that it does not. Below we compare 78 ‚slow' samples (light blue) with the total assemblage in the same transects (dark blue.]



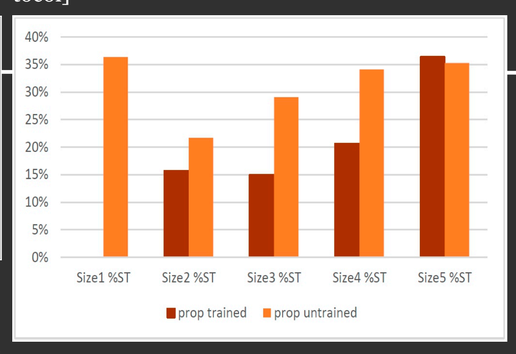
Q: What proportion of the surface artefact assemblage is picked up as a function of the distance to the central line?
A: Contrary to expectation, this proportion is the highest between 25 and 50cm to either side of the central line, possibly as a result of the ‚pendulum scan' used by most walkers.
[data for the right-most bin are polluted]



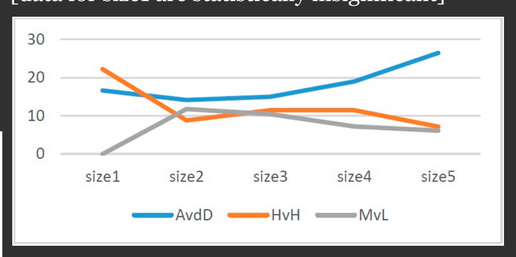
Robert Schön (2002, p. 230) found, in all four of his test fields, statistically significant differences in artefact recovery rates between the inner 2m of a 4m-swath and the outer 2m (T-test). Walkers recovered at least 10% more sherds in the central 2m. The gap between inner and outer recovery rates increased to 17.5% under poor visibility circumstances.

Q: How much difference is there between the detection curves of experienced walkers?
A: A lot. Below (left), transect 17 walked by MvL shows a steeply declining curve; on the right, transect 4 walked by AvdD shows a level curve.

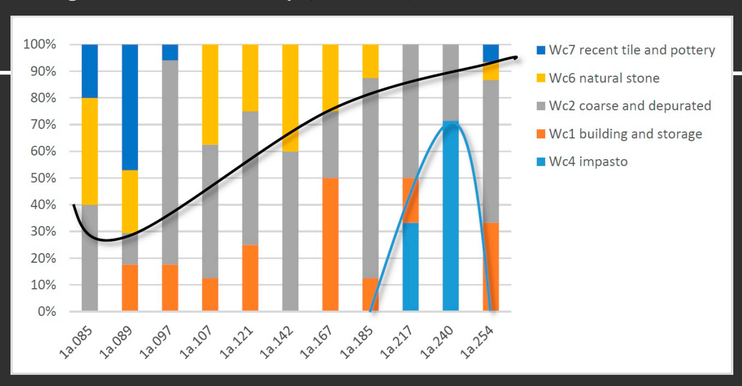
Q: Do trained and untrained walkers pick up different sizes of artefacts?
A: Yes, inexperienced walkers pick up higher proportions of all size classes except the largest (size 5 = diameter > 10cm), probably because they walk slightly slower and their swath width is larger.
[untrained walkers also picked up all fragments smaller than 1 cm, contrary to experimental protocol]



However, this general trend hides significant variation. Below, untrained walker HvH and trained walker MvL are shown to produce nearly identical collections, whereas trained walker AvdD has a preference for the larger sizes.
[data for size1 are statistically insignificant]



Q: How quickly do untrained walkers acquire sufficient experience to be able to take high-quality samples?
A: The graph below shows one inexperienced walker learning to recognise and avoid two categories (Wc6 and Wc7) of irrelevant materials during three weeks of survey (black line).



By the end of the second week this walker has also learned to recognise and collect the most difficult finds category, Wc4 or protohistoric handmade pottery (blue line).

Further Work

The analysis of the data collected in July 2014 has only just begun. We will present a more thorough analysis at the International Mediterranean Survey Workshop, November 7-8, at Groningen University.
A further set of desktop experiments will be carried out on existing GIA survey databases by Ms. Witmer to test assumptions about site detection theory, as well as to evaluate strategies for on-site collection and for measuring the variability of site assemblages.
The results will submitted for publication in the Journal of Field Archaeology.

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